



Molendinar Water Treatment Plant



Molendinar Water Treatment Plant is a conventional water treatment facility located at the end of Jacobs Rd, Nerang on the Gold Coast. Molendinar WTP is capable of treating 180 mega litres of raw water per day. The raw water is sourced from The Hinze Dam.

The Molendinar WTP operates under the conditions set out in an environmental Approval issued by the Environmental Protection Agency

The plant's supply of raw water is drawn from the Hinze Dam lower intake tower adjacent to the main dam wall. It is gravity fed through a single outlet conduit to a pump station located approximately 300m below the toe of the dam wall. The raw water is pumped a short distance to a 7 mega litre header tank and then gravity fed through a 1200mm pipeline approximately 16km down to the Molendinar WTP. During periods of high demand, the header tank is bypassed and raw water is pumped directly to the plant.



Stage 1 **The Process of Water Treatment**

The raw water is pumped to the treatment plant arrives at the plant and is immediately dosed with hydrated lime and Carbon Dioxide to adjust the pH and add alkalinity to the water.

Next the raw water is dosed with the coagulant "Aluminium Sulphate" to make the particulate matter in the water congregate together. This is called flocculation.

A flow control valve that is set by the plant operator to produce a flow that is required to service the needs of the supply area and then regulates the flow of the raw water.



Stage 2 **The Inlet Structure**

The water then flows over a cascade that mixes the chemical and water and then to the clarifiers where it is dosed with a flocculant to promote the gathering together of the coagulated particles to form larger/heavier particles.



Stage 3 **Clarification**

Once in the clarifiers the water is mixed slowly and the larger/heavier particles are allowed to settle to the bottom where they are periodically drawn off to the sludge disposal area.

Clarified water is then drawn from the top of the clarifier and directed to the filters.



Stage 4 **Filtration**

The filters consist of a layer of filter coal on top of a layer of filter sand, which in turn lies on top of a layer of gravel.

The filters will then entrap any particles that escape the clarification process.

The filters will eventually become loaded with particulate matter, which will need to be washed. The waste from the wash is directed to the waste treatment and sludge disposal section of the plant.



Stage 5 **Chemical Dosing**

Adequate treatment of water to potable standard requires the addition of various chemicals. Firstly Hydrated Lime and Carbon Dioxide are added to adjust Alkalinity and pH. Aluminium Sulphate and Polymer are then added to remove particulate matter. Finally the finished water is dosed with Sodium Hydroxide to correct the pH and Sodium Hypochlorite for disinfection.



Stage 6 **Waste Treatment and Sludge Disposal**

Sludge that has settled in the clarifiers and filter wash water is directed to the waste treatment and sludge disposal section of the plant. Filter wash water is treated with Aluminium Sulphate and Polymer and allowed to settle in a recovery tank. The settled sludge is then drawn off into another tank that also receives the sludge from the clarifiers; this sludge is then pumped into the sewage network for treatment at Coombabah Wastewater Treatment Plant.

The water remaining in the recovery tank is then pumped back to treatment process via the inlet structure.



Stage 7 **Plant Control and Monitoring**

The plant is fully automated with a number of operations staff overseeing the process. Molendinar Water Treatment Plant is operated according to Seqwater's Water's Quality and Environmental Management System with treated water required to meet the satisfaction of the Hazardous Analytical Critical Control Point (HACCP) quality control system.

All HACCP critical control points are monitored 24hrs daily with plant operators available after hours for response to emergency situations should they arise.



Stage 8

Laboratory testing is carried out three times daily by operations staff to verify the on-line instrumentation. Additional laboratory analysis for bacterial contamination, metals such as iron and manganese and also algal counting/identification is also carried out.



SOURCE STORE TREAT SUPPLY

